



## SPECIFICATION FOR APPROVAL

File No.: Q/FRK 0.GS.E.C31-D08

Product Name	Metallized polypropylene film capacitor(dipped)
Product Type:	C31 (CBB21 Series)
Product Code	
Customer	
Customer Code	
Issue Date	2015-12

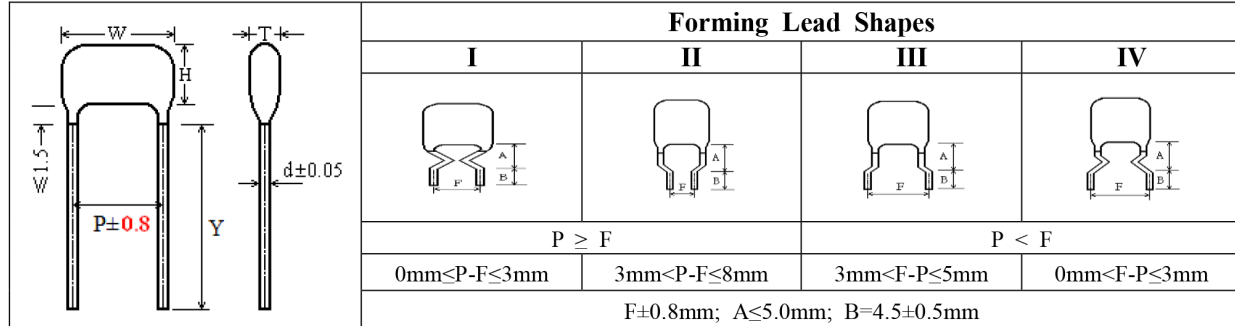
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**Revision record**

No.	Revision description	Recorder	Date	Revised version

## Metallized polypropylene film capacitor(dipped)

### ■ Outline Drawing



### ■ Features

- Metallized polypropylene structure
- Low loss at high frequency
- Small inherent temperature rise
- Flame retardant epoxy resin powder coating (UL94/V-0)

### ■ Typical application

- Widely used in high frequency, DC, AC and pulse circuits
- Providing optimum performance with small size in S-correction circuits for colour TV set
- Specially designed for S-correction circuits of large screen monitor and colour TV
- Suitable for the situation where applies high frequency and high current pulse

### ■ Specifications

Reference Standard	GB/T 14579(IEC 60384-17)						
Climatic Category	40/105/21						
Rated temperature	85°C						
Operating temperature	-40°C~105°C (+85°C to +105°C: decreasing factor 1.25% per °C for $U_R$ )						
Rated Voltage	100V/160V, 250V, 400V, 630V, 1000V/1250V						
Capacitance Range	0.0010 ~ 3.3μF						
Capacitance Tolerance	±5%(J), ±10%(K), ±20%(M)						
Voltage Proof	1.6 $U_R$ (5s)						
Dissipation Factor	≤10×10 <sup>-4</sup> (20°C, 1kHz)						
Insulation Resistance	≥100 000MΩ, $C_N \leq 0.33\mu\text{F}$ ≥30 000s, $C_N > 0.33\mu\text{F}$ (20°C, 100V, 1min)						
Maximum Pulse Rise Time(dV/dt) If the working voltage( $U$ ) is lower than the rated voltage( $U_R$ ), the capacitor can be worked at a higher dV/dt. In this case, the maximum allowed dV/dt is obtain by multiplying the right value with $U_R/U$ .	<b>Pattern I</b>						
	$U_R$ (V)	dV/dt(V/us)					
		P=7.5	P=10.0	P=15.0	P=20.0	P=25.0	P=30.0
	100/160	180	150	110	80	60	--
	200/250	660	560	310	150	110	--
	400	900	780	600	300	180	120
	630	1 500	1 200	900	400	220	150
	1 000	2 500	2 200	--	--	--	--
	<b>Pattern II</b>						
	$U_R$ (V)	dV/dt(V/us)					
		P=7.5	P=10.0	P=15.0	P=22.5		
	100/250	660	560	310	130		
400	900	780	600	300			
630	1 500	1 200	900	400			
1 000/1 250	2 500	2 200	--	--			

### ■ Part number system

The 18 digits part number is formed as follow

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
C	3	1															

Digit 1 to 3 Series code

C31= CBB21

Digit 4 to 5 D.C. rated voltage

2A=100V 2C=160V 2D=200V 2E=250V

2G=400V 2J=630V 3A=1000V 3B=1250V

Digit 6 to 8 Rated capacitance value

For example: 103=10×10<sup>3</sup>pF=0.01μF

Digit 9 Capacitance tolerance

J=±5%, K=±10%, M=±20%

Digit 10 Pitch

3=7.5mm 4=10mm 5=12.5mm 6=15mm

8=20mm 9=22.5mm A=25mm C=30mm

Digit 11 Internal use

S= CBB21 II Pattern

Digit 12 to 15 Lead form and packaging code

Digit 16 to 18 Internal use

**Table 1 lead form and packing code**

Digit 12		Digit 13		Digit 14		Digit 15	
code	explanation	code	explanation	code	explanation	code	explanation
A	ammo-pack	3	F=7.5mm	1	kinked	A	each cap. between two consecutive holes P3=12.7mm,H=20.0mm (For pitch=7.5mm)
		4	F=10.0mm			E	P3=25.4mm;H=20.0mm (For pitch=10.0/15.0mm)
F	lead kinked	6	F=15.0mm	0	B=4.5mm The length of B	0	B Length tolerance ±0.5mm
		7	F=17.5mm				
		8	F=20.0mm				
		9	F=22.5mm				
Y	straight lead “Y” in the figure above		explanation			0	Length tolerance ±0.5mm
		45	lead length 4.5mm				
		35	lead length 3.5mm				
		32	lead length 3.2mm				

Digit12-15 code “C000”means standard lead length (20mm ~ 30mm)



## ■ Dimensions(mm)

### Pattern II (Reduced sizes)

630Vdc(220Vac) <sup>@</sup>							630Vdc(220Vac) <sup>@</sup>							1 000/1 250Vdc <sup>#</sup> (400Vac)						
C <sub>N</sub> (μF)	W max	H max	T max	P	d	Part number	C <sub>N</sub> (μF)	W max	H max	T max	P	d	Part number	C <sub>N</sub> (μF)	W max	H max	T max	P	d	Part number
0.0010	10.0	7.9	4.3	7.5	0.6	C312J102-3S*****	0.027	12.3	9.4	5.7	10.0	0.6	C312J273-4S*****	0.0010	10.0	7.9	4.3	7.5	0.6	C313A102-3S*****
0.0011	10.0	8.1	4.4	7.5	0.6	C312J112-3S*****	0.030	12.3	9.6	6.0	10.0	0.6	C312J303-4S*****	0.0011	10.0	8.1	4.4	7.5	0.6	C313A112-3S*****
0.0012	10.0	8.2	4.5	7.5	0.6	C312J122-3S*****	0.033	12.3	9.9	6.2	10.0	0.6	C312J333-4S*****	0.0012	10.0	8.2	4.5	7.5	0.6	C313A122-3S*****
0.0013	10.0	8.3	4.7	7.5	0.6	C312J132-3S*****	0.036	12.3	10.1	6.4	10.0	0.6	C312J363-4S*****	0.0013	10.0	8.3	4.7	7.5	0.6	C313A132-3S*****
0.0015	10.0	8.1	4.4	7.5	0.6	C312J152-3S*****	0.039	12.3	10.3	6.7	10.0	0.6	C312J393-4S*****	0.0015	10.0	8.1	4.4	7.5	0.6	C313A152-3S*****
0.0016	10.0	8.2	4.5	7.5	0.6	C312J162-3S*****	0.043	17.5	10.7	5.4	15.0	0.6	C312J433-6S*****	0.0016	10.0	8.2	4.5	7.5	0.6	C313A162-3S*****
0.0018	10.0	7.8	4.2	7.5	0.6	C312J182-3S*****	0.047	17.5	10.8	5.6	15.0	0.6	C312J473-6S*****	0.0018	10.0	7.8	4.2	7.5	0.6	C313A182-3S*****
0.0020	10.0	8.0	4.3	7.5	0.6	C312J202-3S*****	0.051	17.5	11.0	5.8	15.0	0.6	C312J513-6S*****	0.0020	10.0	8.0	4.3	7.5	0.6	C313A202-3S*****
0.0022	10.0	8.1	4.5	7.5	0.6	C312J222-3S*****	0.056	17.5	11.2	6.0	15.0	0.6	C312J563-6S*****	0.0022	10.0	8.1	4.5	7.5	0.6	C313A222-3S*****
0.0024	9.8	8.0	4.3	7.5	0.6	C312J242-3S*****	0.062	17.5	11.4	6.2	15.0	0.6	C312J623-6S*****	0.0024	10.0	7.7	4.0	7.5	0.6	C313A242-3S*****
0.0027	9.8	8.1	4.5	7.5	0.6	C312J272-3S*****	0.068	17.5	11.7	6.5	15.0	0.6	C312J683-6S*****	0.0027	10.0	7.8	4.2	7.5	0.6	C313A272-3S*****
0.0030	9.8	8.3	4.7	7.5	0.6	C312J302-3S*****	0.075	17.5	11.9	6.7	15.0	0.6	C312J753-6S*****	0.0030	10.0	8.0	4.4	7.5	0.6	C313A302-3S*****
0.0033	9.8	8.5	4.8	7.5	0.6	C312J332-3S*****	0.082	17.5	12.2	7.0	15.0	0.6	C312J823-6S*****	0.0033	10.0	8.2	4.5	7.5	0.6	C313A332-3S*****
0.0036	9.8	8.0	4.4	7.5	0.6	C312J362-3S*****	0.091	17.5	12.5	7.3	15.0	0.6	C312J913-6S*****	0.0036	10.0	8.3	4.7	7.5	0.6	C313A362-3S*****
0.0039	9.8	8.2	4.5	7.5	0.6	C312J392-3S*****	0.10	17.5	12.8	7.6	15.0	0.8	C312J104-6S*****	0.0039	10.0	8.4	4.8	7.5	0.6	C313A392-3S*****
0.0043	9.8	8.3	4.7	7.5	0.6	C312J432-3S*****	0.11	17.5	13.6	7.9	15.0	0.8	C312J114-6S*****	0.0043	10.0	8.2	4.5	7.5	0.6	C313A432-3S*****
0.0047	9.8	8.5	4.9	7.5	0.6	C312J472-3S*****	0.12	17.5	13.9	8.2	15.0	0.8	C312J124-6S*****	0.0047	10.0	8.3	4.7	7.5	0.6	C313A472-3S*****
0.0051	9.8	8.6	5.0	7.5	0.6	C312J512-3S*****	0.13	17.5	14.2	8.5	15.0	0.8	C312J134-6S*****	0.0051	10.0	8.5	4.8	7.5	0.6	C313A512-3S*****
0.0056	9.8	8.8	5.2	7.5	0.6	C312J562-3S*****	0.15	17.5	14.7	9.0	15.0	0.8	C312J154-6S*****	0.0056	10.0	8.7	5.0	7.5	0.6	C313A562-3S*****
0.0062	9.8	9.0	5.4	7.5	0.6	C312J622-3S*****	0.16	17.5	15.0	9.3	15.0	0.8	C312J164-6S*****	0.0062	10.0	8.7	5.0	7.5	0.6	C313A622-3S*****
0.0068	12.3	8.0	4.4	10.0	0.6	C312J682-4S*****	0.18	17.5	15.5	9.8	15.0	0.8	C312J184-6S*****	0.0068	12.0	8.9	5.2	10.0	0.6	C313A682-4S*****
0.0075	12.3	8.2	4.5	10.0	0.6	C312J752-4S*****	0.20	17.5	16.0	10.3	15.0	0.8	C312J204-6S*****	0.0075	12.0	9.1	5.4	10.0	0.6	C313A752-4S*****
0.0082	12.3	8.3	4.7	10.0	0.6	C312J822-4S*****	0.22	25.2	15.2	7.9	22.5	0.8	C312J224-9S*****	0.0082	12.0	9.3	5.6	10.0	0.6	C313A822-4S*****
0.0091	12.3	8.5	4.9	10.0	0.6	C312J912-4S*****	0.24	25.2	15.5	8.2	22.5	0.8	C312J244-9S*****	0.0091	12.0	9.5	5.9	10.0	0.6	C313A912-4S*****
0.010	12.3	7.8	4.1	10.0	0.6	C312J103-4S*****	0.27	25.2	15.9	9.2	22.5	0.8	C312J274-9S*****	0.010	12.0	9.9	6.3	10.0	0.6	C313A103-4S*****
0.011	12.3	7.9	4.2	10.0	0.6	C312J113-4S*****	0.30	25.2	16.4	9.6	22.5	0.8	C312J304-9S*****							
0.012	12.3	8.0	4.4	10.0	0.6	C312J123-4S*****	0.33	25.2	16.8	10.0	22.5	0.8	C312J334-9S*****							
0.013	12.3	8.1	4.5	10.0	0.6	C312J133-4S*****	0.36	25.2	17.2	10.4	22.5	0.8	C312J364-9S*****							
0.015	12.3	8.3	4.7	10.0	0.6	C312J153-4S*****	0.39	25.2	17.6	10.8	22.5	0.8	C312J394-9S*****							
0.016	12.3	8.5	4.8	10.0	0.6	C312J163-4S*****	0.43	25.2	18.1	11.3	22.5	0.8	C312J434-9S*****							
0.018	12.3	8.6	4.9	10.0	0.6	C312J183-4S*****	0.47	25.2	18.6	11.8	22.5	0.8	C312J474-9S*****							
0.020	12.3	8.8	5.1	10.0	0.6	C312J203-4S*****	0.51	25.2	19.0	12.2	22.5	0.8	C312J514-9S*****							
0.022	12.3	8.9	5.3	10.0	0.6	C312J223-4S*****	0.56	25.2	19.6	12.8	22.5	0.8	C312J564-9S*****							
0.024	12.3	9.1	5.5	10.0	0.6	C312J243-4S*****														

Note: 1. “-”=capacitance tolerance code, M=±20%,K=±10%,J=±5%

2. “\*\*\*\*\*”=lead form and packing code (refer to table 1)

3. “#” when the rated voltage is 1250Vdc,the digit 4~5 is 3B.

4. “@”Not suitable for across-the-line applications. Pls refer to interference Suppression Capacitors.



## ■ Dimensions(mm)

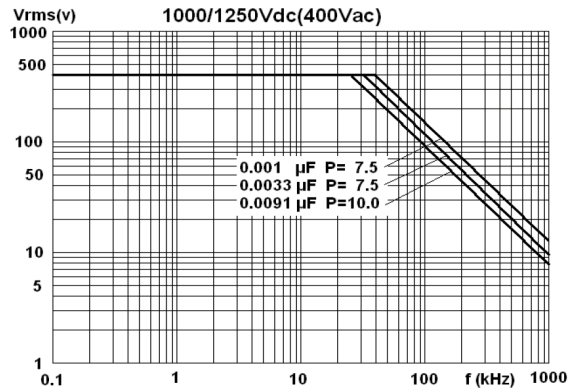
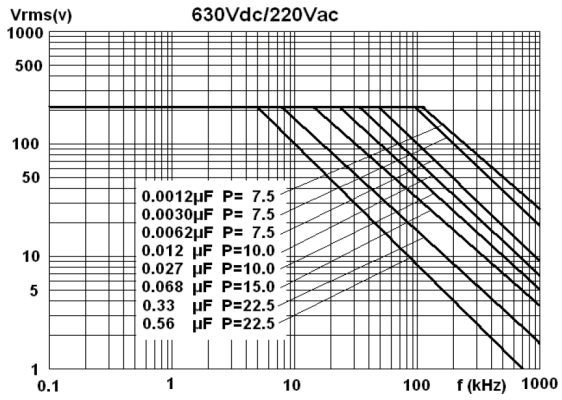
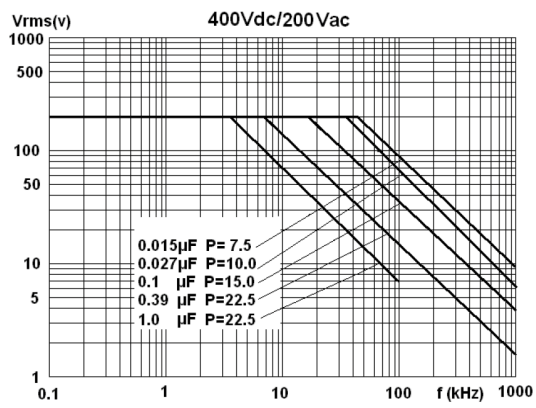
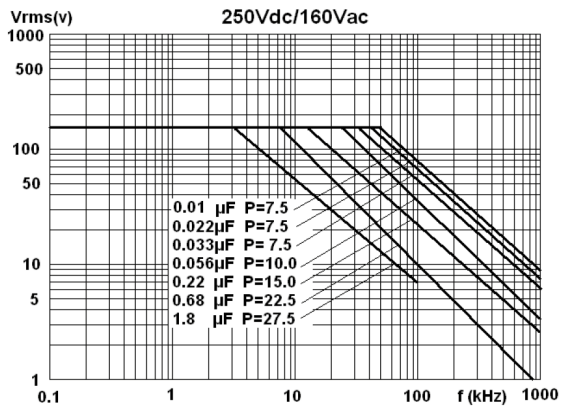
### Pattern I (High performance)

630Vdc(220Vac) <sup>@</sup>							630Vdc(220Vac) <sup>@</sup>							1 000Vdc(400Vac)						
C <sub>N</sub> (μF)	W max	H max	T max	P	d	Part number	C <sub>N</sub> (μF)	W max	H max	T max	P	d	Part number	C <sub>N</sub> (μF)	W max	H max	T max	P	d	Part number
0.0010	10.0	9.0	5.5	7.5	0.6	C312J102-30*****	0.024	19.0	12.0	6.5	15.0	0.6	C312J243-60*****	0.0010	10.0	9.0	5.5	7.5	0.6	C313A102-30*****
0.0011	10.0	9.0	5.5	7.5	0.6	C312J112-30*****	0.027	19.0	12.0	7.0	15.0	0.6	C312J273-60*****	0.0011	10.0	9.0	5.5	7.5	0.6	C313A112-30*****
0.0012	10.0	9.0	5.0	7.5	0.6	C312J122-30*****	0.030	19.0	12.5	7.0	15.0	0.6	C312J303-60*****	0.0012	10.0	9.0	5.0	7.5	0.6	C313A122-30*****
0.0013	10.0	9.0	5.0	7.5	0.6	C312J132-30*****	0.033	19.0	12.5	7.5	15.0	0.6	C312J333-60*****	0.0013	10.0	9.0	5.0	7.5	0.6	C313A132-30*****
0.0015	10.0	9.0	5.0	7.5	0.6	C312J152-30*****	0.036	19.0	13.0	8.0	15.0	0.6	C312J363-60*****	0.0015	10.0	9.0	5.0	7.5	0.6	C313A152-30*****
0.0016	10.0	9.0	5.5	7.5	0.6	C312J162-30*****	0.039	19.0	13.0	8.0	15.0	0.6	C312J393-60*****	0.0016	10.0	9.0	5.5	7.5	0.6	C313A162-30*****
0.0018	10.0	9.0	5.5	7.5	0.6	C312J182-30*****	0.043	19.0	13.5	8.0	15.0	0.6	C312J433-60*****	0.0018	10.0	9.0	5.5	7.5	0.6	C313A182-30*****
0.0020	10.0	9.0	5.5	7.5	0.6	C312J202-30*****	0.047	19.0	13.5	8.5	15.0	0.6	C312J473-60*****	0.0020	10.0	9.0	5.5	7.5	0.6	C313A202-30*****
0.0022	10.0	9.0	6.0	7.5	0.6	C312J222-30*****	0.051	19.0	14.0	9.0	15.0	0.8	C312J513-60*****	0.0022	10.0	9.0	6.0	7.5	0.6	C313A222-30*****
0.0024	10.0	9.0	5.0	7.5	0.6	C312J242-30*****	0.056	19.0	15.0	8.5	15.0	0.8	C312J563-60*****	0.0024	10.0	10.0	6.0	7.5	0.6	C313A242-30*****
0.0027	10.0	9.0	5.0	7.5	0.6	C312J272-30*****	0.062	19.0	15.5	9.0	15.0	0.8	C312J623-60*****	0.0027	10.0	10.0	6.0	7.5	0.6	C313A272-30*****
0.0030	10.0	9.0	5.0	7.5	0.6	C312J302-30*****	0.068	24.0	14.5	8.0	20.0	0.8	C312J683-80*****	0.0030	10.0	10.0	6.5	7.5	0.6	C313A302-30*****
0.0033	10.0	9.0	5.5	7.5	0.6	C312J332-30*****	0.075	24.0	15.0	8.0	20.0	0.8	C312J753-80*****	0.0033	10.0	10.0	6.5	7.5	0.6	C313A332-30*****
0.0036	10.0	9.0	5.5	7.5	0.6	C312J362-30*****	0.082	24.0	15.0	8.5	20.0	0.8	C312J823-80*****	0.0036	10.0	10.5	7.0	7.5	0.6	C313A362-30*****
0.0039	10.0	9.0	5.5	7.5	0.6	C312J392-30*****	0.091	24.0	15.5	8.5	20.0	0.8	C312J913-80*****	0.0039	10.0	10.5	7.0	7.5	0.6	C313A392-30*****
0.0043	10.0	9.5	6.0	7.5	0.6	C312J432-30*****	0.10	24.0	16.0	9.0	20.0	0.8	C312J104-80*****	0.0043	10.0	10.5	7.0	7.5	0.6	C313A432-30*****
0.0047	10.0	9.5	6.0	7.5	0.6	C312J472-30*****	0.11	24.0	16.0	9.5	20.0	0.8	C312J114-80*****	0.0047	10.0	11.0	7.5	7.5	0.6	C313A472-30*****
0.0051	10.0	9.5	6.5	7.5	0.6	C312J512-30*****	0.12	24.0	16.5	10.0	20.0	0.8	C312J124-80*****	0.0051	10.0	11.0	7.5	7.5	0.6	C313A512-30*****
0.0056	10.0	10.0	6.5	7.5	0.6	C312J562-30*****	0.13	24.0	17.0	10.0	20.0	0.8	C312J134-80*****	0.0056	10.0	11.5	8.0	7.5	0.6	C313A562-30*****
0.0062	10.0	10.0	6.5	7.5	0.6	C312J622-30*****	0.15	24.0	17.5	10.5	20.0	0.8	C312J154-80*****	0.0062	10.0	11.5	8.5	7.5	0.6	C313A622-30*****
0.0068	12.5	9.0	5.5	10.0	0.6	C312J682-40*****	0.16	24.0	18.0	11.0	20.0	0.8	C312J164-80*****	0.0068	12.5	10.5	7.0	10.0	0.6	C313A682-40*****
0.0075	12.5	9.0	6.0	10.0	0.6	C312J752-40*****	0.18	24.0	19.5	11.0	20.0	0.8	C312J184-80*****	0.0075	12.5	10.5	7.0	10.0	0.6	C313A752-40*****
0.0082	12.5	9.0	6.0	10.0	0.6	C312J822-40*****	0.20	29.0	19.0	10.0	25.0	0.8	C312J204-A0*****	0.0082	12.5	10.5	7.0	10.0	0.6	C313A822-40*****
0.0091	12.5	9.5	6.0	10.0	0.6	C312J912-40*****	0.22	29.0	19.5	10.0	25.0	0.8	C312J224-A0*****	0.0091	12.5	11.0	7.5	10.0	0.6	C313A912-40*****
0.010	13.0	11.0	6.0	10.0	0.6	C312J103-40*****	0.24	29.0	20.0	10.5	25.0	0.8	C312J244-A0*****							
0.011	13.0	11.5	6.5	10.0	0.6	C312J113-40*****	0.27	29.0	20.5	11.5	25.0	0.8	C312J274-A0*****							
0.012	13.0	11.5	6.5	10.0	0.6	C312J123-40*****	0.30	29.0	21.5	11.5	25.0	0.8	C312J304-A0*****							
0.013	13.0	11.5	7.0	10.0	0.6	C312J133-40*****	0.33	29.0	22.0	12.0	25.0	0.8	C312J334-A0*****							
0.015	13.0	12.0	7.0	10.0	0.6	C312J153-40*****	0.36	29.0	22.5	12.5	25.0	0.8	C312J364-A0*****							
0.016	13.0	12.0	7.5	10.0	0.6	C312J163-40*****	0.39	34.0	20.5	12.5	30.0	0.8	C312J394-C0*****							
0.018	13.0	13.0	7.5	10.0	0.6	C312J183-40*****	0.43	34.0	21.5	13.0	30.0	0.8	C312J434-C0*****							
0.020	13.0	13.5	8.0	10.0	0.6	C312J203-40*****	0.47	34.0	22.0	13.5	30.0	0.8	C312J474-C0*****							
0.022	13.0	13.5	8.0	10.0	0.6	C312J223-40*****	0.51	34.0	22.5	14.0	30.0	0.8	C312J514-C0*****							
							0.56	34.0	23.0	14.5	30.0	0.8	C312J564-C0*****							

- Note: 1. “-”=capacitance tolerance code, M=±20%,K=±10%,J=±5%  
 2. “\*\*\*\*”=lead form and packing code (refer to table 1)  
 3. “@” Not suitable for across-the-line applications. Pls refer to Interference Suppression Capacitors.



## ■ MAX. VOLTAGE(Vr.m.s) VERSUS FREQUENCY



Note: sinusoidal wave-form, environment temperature  $\leq 85^{\circ}\text{C}$ , internal temperature rise  $\Delta T=10^{\circ}\text{C}$ , p (pitch) in mm.

## ■ Test Method And Performance

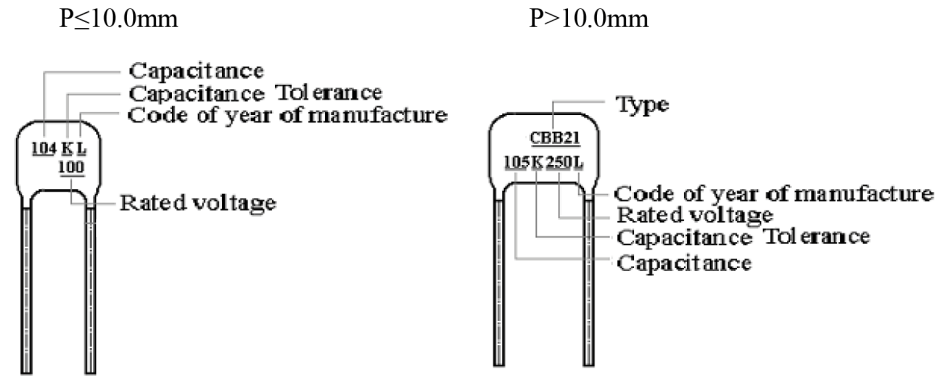
No.	Item	Performance	Test method(IEC 60384-17)
1	Solderability	Good quality of tinning	Solder temperature:245°C±5°C Immersion time: 2.0s±0.5s
2	Initial measurement	Capacitance Tgδ:1kHz, C>1.0μF 10kHz, C≤1.0μF	
	Terminal strength	There shall be no visible damage	Tension: 0.6≤φd≤0.8mm, 10N φd=1.0mm, 20N Bend: 0.6≤φd≤0.8mm, 5N φd=1.0mm, 10N The terminals shall be bent 2 times in each direction.
	Resistance to solder heat	There shall be no visible damage	Solder temperature:260°C±5°C Immersion time: 10s±1s
	Final measurement	ΔC/C ≤±3%(relative to the initial value) Increase of tgδ: ≤0.004 (10kHz,C≤1.0μF) ≤0.004 (1kHz,C>1.0μF)	
3	Initial measurement	Capacitance Tgδ:1kHz, C>1.0μF 10kHz, C≤1.0μF	
	Rapid change of temperature	There shall be no evidence of deterioration.	θ <sub>A</sub> =-40°C, θ <sub>B</sub> =+85°C 5 cycles, Duration: t=30min
3	Vibration	There shall be no evidence of deterioration.	Amplitude 0.75mm or acceleration 98m/s <sup>2</sup> (whichever is the smaller severity), f: 10Hz to 500Hz.Three directions, 2h for each direction, total 6h.
	Bump	There shall be no evidence of deterioration.	4 000 times, Acceleration: 390m/s <sup>2</sup> ,Pulse duration, 6ms
	Final measurement	ΔC/C ≤±3%(relative to the initial value) Increase of tgδ: ≤0.004 (10kHz, C≤1.0μF) ≤0.004 (1kHz, C>1.0μF) IR: ≥ 50% of the rated value	
4	climate sequence	Initial measurement	Capacitance Tgδ:1kHz, C>1.0μF 10kHz, C≤1.0μF
		Dry heat	+85°C, 16h
		Damp heat, Cyclic	Test Db, Severity: b, the first cycle
		Cold	-40°C, 2h
		Low air pressure	There shall be no permanent breakdown, flashover or other harmful deformation when applying U <sub>R</sub> at the last 1 minute. 15°C~ 35°C, 8.5kPa, 1h,

No.	Item		Performance	Test method(IEC 60384-17)
4	climate sequence (continue)	Damp heat, cyclic other		Test Db, Severity b, the other cycles, Applying $U_R$ for 1 minute after the test finished.
		Final measurement	There shall be no evidence of deterioration and the marking shall be legible. $\Delta C/C \leq \pm 5\%$ (relative to the initial value) Increase of $\text{tg}\delta$ : $\leq 0.005$ (10kHz, $C \leq 1.0\mu\text{F}$ ) $\leq 0.005$ (1kHz, $C > 1.0\mu\text{F}$ ) IR: $\geq 50\%$ of the rated value	
5	Damp heat steady state		There shall be no evidence of deterioration and the marking shall be legible. $\Delta C/C \leq \pm 5\%$ (relative to the initial value) Increase of $\text{tg}\delta \leq 0.002$ IR: $\geq 50\%$ of the rated value	Temperature: $40^\circ\text{C} \pm 2^\circ\text{C}$ Humidity: $93 \pm 3\%$ RH Duration: 21 days
6	Endurance		$\Delta C/C \leq \pm 5\%$ (relative to the initial value) Increase of $\text{tg}\delta$ : $\leq 0.004$ (10kHz, $C \leq 1.0\mu\text{F}$ ) $\leq 0.004$ (1kHz, $C > 1.0\mu\text{F}$ ) IR: $\geq 50\%$ of the rated value	Temperature: $+85^\circ\text{C}$ Voltage: $1.25 \times U_R$ (50Hz) Duration: 1 000h
7	Temperature characteristic		Measuring capacitance at test point b, d, f: Characteristic at lower category temperature $-40^\circ\text{C}$ : $0 \leq (C_b - C_d) / C_d \leq +3\%$ Characteristic at upper category temperature $+85^\circ\text{C}$ : $-3.25\% \leq (C_f - C_d) / C_d \leq 0$	Static method: The capacitors should be kept at the following temperature in turn: a. $(+20 \pm 2)^\circ\text{C}$ b. $(-40 \pm 2)^\circ\text{C}$ d. $(20 \pm 2)^\circ\text{C}$ f. $(+85 \pm 2)^\circ\text{C}$ g. $(+20 \pm 2)^\circ\text{C}$
8	Charging and discharging		$\Delta C/C \leq \pm 5\%$ (relative to the initial value) Increase of $\text{tg}\delta$ : $\leq 0.005$ (10kHz, $C \leq 1.0\mu\text{F}$ ) $\leq 0.005$ (1kHz, $C > 1.0\mu\text{F}$ ) IR: $\geq 50\%$ of the rated value	Times: 10 000 Duration of charging: 0.5s Duration of discharging: 0.5s Charging voltage: rated voltage Charging resistance: $220/C_R$ ( $\Omega$ ) Discharging resistance: $R = 10/C_R$ ( $\Omega$ ) or $20\Omega$ (whichever is the greater) $C_R$ : rated capacitance ( $\mu\text{F}$ )

### Quality ensuring test (before shipment):

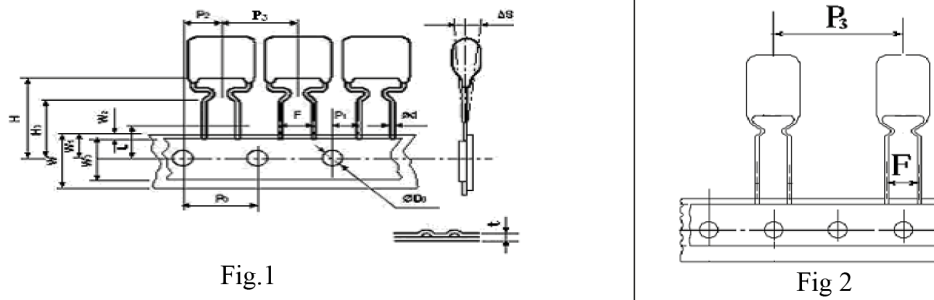
Inspection item (each batch)	Inspection level (GB 2828)	
	IL	AQL
Appearance inspection	S-4	1.5%
Dimensions		
Capacitance	II	0.65%
Tangent of the loss angle		
Dielectric strength		
Insulation resistance		
Solderability	S-3	2.5%

## ■ Marking



## ■ Taping for dipped-type capacitor

### ▲ Outline Drawing



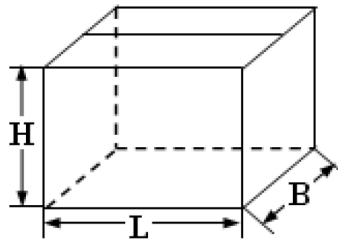
### ▲ Taping Dimensions(mm)

Technology index title	Code	Dimensions (mm)				Tolerance
		P=5.0	P=7.5	P=10.0	P=15.0	
Taping type	—	Fig 1	Fig 1	Fig 2	Fig 2	—
Part number Digit12-15	Ammo-pack	A21A	A31A	A41E	A61E	
Taping pitch	$P_3$	12.7	12.7	25.4	25.4	$\pm 1.0$
Feed hole pitch	$P_0$	12.7	12.7	12.7	12.7	$\pm 0.3$
Center of wire	$P_1$	3.85	2.60	7.7	5.2	$\pm 0.7$
Center of body	$P_2$	6.35	6.35	12.7	12.7	$\pm 1.3$
Pitch of taping wire	$F^{**}$	5.0	7.5	10.0	15.0	+0.8 -0.2
Component alignment	$\Delta S$	0	0	0	0	$\pm 2.0$
Height of crangle from tape center	H	20.0	20.0	20.0	20.0	$\pm 1.0$
Height of component from tape center	$H_0$	16.0	16.0	16.0	16.0	$\pm 0.5$
Carrier tape width	W	18.0	18.0	18.0	18.0	+1.0 -0.5
Hold down tape width	$W_0$	10min	10min	10min	10min	—
Hole position	$W_1$	9.0	9.0	9.0	9.0	+0.75 -0.5
Hold down tape sition	$W_2$	3max	3max	3max	3max	—
Feed hole dia.	$D_0$	4.0	4.0	4.0	4.0	$\pm 0.3$
Tape thickness	t	0.7	0.7	0.7	0.7	$\pm 0.2$

**Note:** \*  $P_0=15\text{mm}$  is also available;  
\*\* F can be other lead spacing;

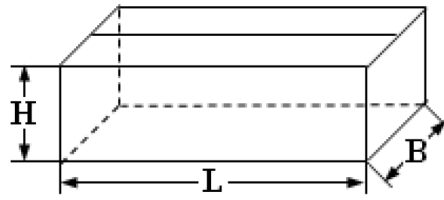
■ Packing box sizes(mm)

1. Out packing box for bulk



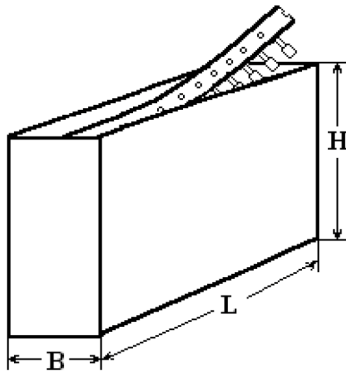
L:375±5  
B:375±5  
H:265±5

2. Inner packing box for bulk



L:355±3  
B:175±3  
H:118±3

3. Box sizes for Ammo-pack



L:330±3  
B:48±3  
H:260±3